CLAIMS

1. Method for analysing synchronisations of the electroencephalography of an individual using a set of sensors starting from the cerebral electromagnetic analysis of the patient, characterised in that it comprises the following steps consisting of:

- a step to create a database (12) comprising:

• a phase (10) for acquisition and digitisation of electrophysiological signals output from these sensors,

• a phase (11) to calculate the degree of synchronisation existing between all pairs of sensors recorded in an assembly protocol, in frequency bands between 0 and 2000 Hz, to build up this database (12) of classes each characterising a reference state;

- a step (13) for statistical validation of a period analysed in real time, which assigns this period to a class in the database,

- a step (14) to detect a specific period with a determined degree of synchronisation.

2. Method according to claim 1, which includes an analysis associated with at least one type of electrophysiological signals among electrocardiograms, electrooculograms, electrodermograms, breathing signals.

3. Method according to claim 1, in which a PLS method is used during the statistical validation step, which estimates the phase difference between oscillations of signals from two electrodes.

4. Method according to claim 3, in which the statistical level of the PLS synchronisation between two signals is evaluated using the circular variance of the phase difference between the signals.

5. Method according to claim 3, in which the statistical level of the PLS synchronisation between two signals is evaluated using the normalised Shannon entropy of the phase difference between the signals.

6. Application of the method according to any one of claims 1 to 5, to real time medical or cognitive monitoring.

7. Application of the method according to any one of claims 1 to 5, for characterising and differentiating physiological or pathological states.

8. Application of the method according to claim 7, for anticipating the occurrence of epileptic seizures.

9. Application of the method according to claim 7, for diagnosis assistance in the early stage of Parkinson's and Alzheimer's diseases.

10. Application of the method according to claim 7, for diagnosis assistance of schizophrenia and depression.

11. Real time medical or cognitive monitoring device starting from the cerebral electromagnetic

analysis of an individual, characterised in that it comprises:

- means (10) of acquiring and digitising electrophysiological signals output from sensors;
- means (11) of calculating the synchronisation between all pairs of sensors recorded in an assembly process, in frequency bands between 0 and 2000 Hz, to build up a database (12) of classes each characterising a reference state;
- means (13) of statistically validating a period analysed in real time to assign this period to a class in the database;
- means (14) of detecting a cognitive period or a specific pathological period;
- means (15) of sending an alert signal if applicable.

12. Device according to claim 11, which includes means of performing an analysis associated with at least one type of electrophysiological signals among electrocardiograms, electrooculograms, electrodermograms, breathing signals.

13. Device according to claim 11, in which a PLS method is used by the statistical validation means, which estimates the phase difference between oscillations of signals from two electrodes.

14. Device according to claim 13, in which the statistical level of the PLS synchronisation between

two signals is evaluated using the circular variance of the phase difference between the signals.

15. Device according to claim 13, in which the statistical level of the PLS synchronisation between two signals is evaluated using the normalised Shannon entropy of the phase difference between the signals.

16. Device according to claim 11, which includes:

- circuits (20, 21, 22) for acquisition of signals representing the electrical activity of the brain;
- a processor (23) being used for acquisition and processing of these signals;
- an alert circuit for the patient or for his environment.

17. Device according to claim 11, which is a device that the patient can carry himself or herself.

18. Device according to claim 11, miniaturised so that it can be implanted subcutaneously.